UNITED STATES PATENT AND TRADEMARK OFFICE

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Please find below and/or attached an Office communication concerning this application or proceeding.

PTO-90C (Rev. 10/03)

	Application No.	Applicant(s)
Office Action Summary	09/750,382	ZHOU ET AL.
	Examiner	Art Unit	
	Paulos M. Natnael	2614	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM
THE MAILING DATE OF THIS COMMUNICATION.
- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed
after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any
earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☐ Responsive to communication(s) filed on _____ .

2a)☐ This action is **FINAL**.   2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is
closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-70* is/are pending in the application.

     4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-27,30-61,63,64,65 and 66-70* is/are rejected.

7)☒ Claim(s) *28,29 and 62* is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

     Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

     Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. §§ 119 and 120

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

     a)☒ All b)☐ Some * c)☐ None of:

        1.☐ Certified copies of the priority documents have been received.

        2.☐ Certified copies of the priority documents have been received in Application No. _____ .

        3.☒ Copies of the certified copies of the priority documents have been received in this National Stage
application from the International Bureau (PCT Rule 17.2(a)).

     * See the attached detailed Office action for a list of the certified copies not received.

13)☒ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application)
since a specific reference was included in the first sentence of the specification or in an Application Data Sheet.
37 CFR 1.78.

     a) ☐ The translation of the foreign language provisional application has been received.

14)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121 since a specific
reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)		4) ☐ Interview Summary (PTO-413) Paper No(s). _____ .
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)		5) ☐ Notice of Informal Patent Application (PTO-152)
3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) *3* .		6) ☐ Other: .

U.S. Patent and Trademark Office

PTOL-326 (Rev. 11-03)   **Office Action Summary**   Part of Paper No. 7

DETAILED ACTION

Drawings

1.   The drawings are objected to under 37 CFR 1.83(a). The drawings must show

every feature of the invention specified in the claims. Therefore, the "processor" in

claim 9, must be shown or the feature(s) canceled from the claim(s). No new matter

should be entered.

A proposed drawing correction or corrected drawings are required in reply to the

Office action to avoid abandonment of the application. The objection to the drawings

will not be held in abeyance.

Claim Rejections - 35 USC § 112

2.   The following is a quotation of the first paragraph of 35 U.S.C. 112:

> The specification shall contain a written description of the invention, and of the manner and process of
> making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the
> art to which it pertains, or with which it is most nearly connected, to make and use the same and shall
> set forth the best mode contemplated by the inventor of carrying out his invention.

3.   Claims **39-44** are rejected under 35 U.S.C. 112, first paragraph, as failing to

comply with the enablement requirement. The claim(s) contains subject matter which

was not described in the specification in such a way as to enable one skilled in the art to

which it pertains, or with which it is most nearly connected, to make and/or use the

invention.

There is no embodiment disclosed in the specification to show the output of the

combiner is input to the buffer memory, rather the combiner's output is input to the

clipper circuit as shown in Fig.4. Thus, in claim 39, the claimed "an image buffer having

a first input terminal coupled to the second pixel-value output terminal and having a

second input terminal coupled to the combiner output terminal, " is not enabling and

therefore one skilled in the art would not be able to make or use the invention as

claimed without undue experimentation.

4.   The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly
> claiming the subject matter which the applicant regards as his invention.

5.   Claims **5-7, 20-23, and 46-47, 57** are rejected under 35 U.S.C. 112, second

paragraph, as being indefinite for failing to particularly point out and distinctly claim the

subject matter which applicant regards as the invention.

In claims **5-7, 20-22,46,** the claimed the compensation value or compensation

values lack antecedent basis.

In claims **6, 22 and 47,** the claimed "range of -3 – 3" is unclear whether or not it

is referring to the range from (–3) to (+3), rendering the claims indefinite;

In claim **23**, the claimed "compare the first sum of the first pixel and first

compensation values and the second sum of the second pixel and second

compensation values to zero", is unclear whether it is comparing the values to zero

which would make no sense, or initializing the values to zero, rendering the claim

indefinite.

In claim **57**, the claimed "comparing the first sum of the pixel and first

compensation values to zero", is unclear whether it is comparing the values to zero

which would make no sense, or initializing/setting the values to zero, rendering the

claim indefinite.

Claim Rejections - 35 USC § 102

6.   The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that

form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

7.   Claims **1-3,5,8-17,20, 23-25, 30-31, 33-38, 45- 46, 48-54, 56, 58,59, 63,65-70**

are rejected under 35 U.S.C. 102(b) as being anticipated by **Shono**, U.S. Pat. No.

5,436,736.

Considering claim 1, Shono discloses all claimed subject matter, note;

a) the claimed a pixel circuit operable to, compare a pixel value to a threshold value, is

met by Comparator 23, Fig.4;

b) modify the pixel value if the pixel value has a predetermined relationship to the

threshold value, is met by the Adder 22, fig.4; (See col. 5, lines 55-65)

Considering claim 2, the image processing circuit of claim 1 wherein the pixel value

comprises a luminance pixel value, is **inherent** because in each pixel the luminance

and color difference components would be represented.

Considering claim **3,** the image processing circuit of claim 1 wherein the pixel value

comprises a chrominance pixel value.

See rejection of claim 2.

Considering claim **5,** the image processing circuit of claim 1 wherein the compensation

value comprises a randomly generated value, is met by the numbers or values

generated by the random number generator 24, fig.4;

Considering claim **8,** the image processing circuit of claim 1 wherein the pixel circuit is

operable to modify the pixel value if the pixel value is less than the threshold value.

See rejection of claim 1(b).

Considering claim **9,** the image processing circuit of claim 1 wherein the pixel circuit

comprises a processor, is **inherent** in such circuits, because without a processor or a

controller the circuit would not work properly.

Considering claim **10,** the image processing circuit of claim 1 wherein the pixel circuit is

operable to modify the pixel value by adding a compensation value to the pixel value, is

met by the adder which adds the binarized BL signal to the pixel signal fH, fig.4;

Considering claim **11,** an image processing circuit, comprising

a) a pixel circuit operable to, generate a random number, is met by Random Number

Generator 24, Fig.4;

b) combine the random number with a pixel value, is met by Adder 22, Fig.2

Considering claim **12**, wherein the pixel circuit is further operable to truncate the random

number before combining the random number with the pixel value, *is inherent because*

the random number would have to be suitably sized before being combined with the

pixel value for successful, desired output.

Considering claim **13**, the pixel circuit is further operable to clip the pixel value if the

pixel value is outside of a predetermined range, is inherent as well *because the pixel*

value would have to be suitably sized for successful or desired output.

Considering claim **14**, the image processing circuit of claim 11 wherein the pixel circuit

is operable to add the random number to the pixel value, is met by adder 22,Fig.1;

Considering claim **15**,

a) a pixel circuit operable to, compare a first pixel value to a first threshold value, the

first pixel value corresponding to a pixel location in a first video frame, is met by

comparator 23, Fig.4;

b) add a first compensation value to the first pixel value if the first pixel value is

less than the first threshold value, is met by Adder 22, fig.4;

c) compare a second pixel value to a second threshold value, the second pixel value

corresponding to the pixel location in a second video frame, add a second

compensation value to the second pixel value if the second pixel value is less than the

second threshold value, is *inherent because the system would repeatedly generate*

random numbers one after the other as needed and repeat the process again and

again. (see also fig. 5)

Considering claim **16**, the image processing circuit of claim 15 wherein the first and

second pixel values comprise respective luminance pixel values.

    See rejection of claim 2.

Considering claim **17,** the image processing circuit of claim 15 wherein the first and

second 5 pixel values comprises respective chrominance pixel values.

    See rejection of claims 2;

Considering claim **20**, the image processing circuit of claim 15 wherein the first and

second compensation values comprise respective randomly generated numbers, is met

by the random numbers generated by random number generator 24, Fig.4;

Considering claim **23,** the image processing circuit of claim 15 wherein the pixel circuit

is further operable to:

compare the first sum of the first pixel and first compensation values and the

second sum of the second pixel and second compensation values to zero; and

set the first pixel value equal to zero if the first sum is less than zero and set

the second pixel value equal to zero if the second sum is less than zero.

Considering claim 24, an image processing circuit, comprising

a) a pixel circuit operable to, generate a first random number using a first seed number,

is met by Random Number Generator 24, Fig.**4;**

b) compare a first pixel values to a first threshold value, is met by the comparator 23,

fig.4;

c) add the first random number to the first pixel value if the first pixel value is

less than the first threshold value, is met by the Adder 22, fig.4;

d) generate a second random number using a second seed number, compare a second

pixel value to a second threshold value, and add the second random number to the

second pixel value if the second pixel value is less than the second threshold value, *is*

implied because the system would repeatedly generate random numbers one after the

other as needed and repeat the process again and again. (see also fig. 5)

Considering claim **25**, wherein the pixel circuit is operable to truncate the first random

number before adding the first random number to the first pixel value; and truncate the

second random number before adding the second random number to the second pixel

value;

Regarding claim 25, see rejection of claim 12.

Considering claim **30**, the image processing circuit of claim 24 wherein:

the first pixel value corresponds to a first pixel location in an image; and

the second pixel value corresponds to a second pixel location in the image,

the second pixel location contiguous with the first pixel location, is **inherent** in a pixel

image display system.

Considering claim **31**, an image processing circuit, comprising

a) a pixel circuit operable to, generate a first random number using a first seed number,

b) compare a first pixel value to a first threshold value, the first pixel value

corresponding to a starting pixel location in a first video frame

c) add the first random number to the first pixel value if the first pixel value is less than

the first threshold value,

d) generate a second random number using a second seed number, compare a second

pixel value to a second threshold value, the second pixel value corresponding to a

starting pixel location in a second video frame, add the second random number to the

second pixel value if the second pixel value is less than the second threshold value, *is*

inherent because the system would repeatedly generate random numbers one after the

other as needed and repeat the process again and again. (see also fig. 5)

Considering claim **33**, the image processing circuit of claim 31 wherein the pixel circuit

is further operable to: a) generate a third random number using a third seed number;

b) compare a third pixel value to a third threshold value, the third pixel value

corresponding to an ending pixel location in the first video frame; c) add the third

random number to the third pixel value if the third pixel value is less than the third

threshold value; and d) set the second seed number equal to the third random number.

       See rejection of claim 31 (d).

Considering claim **34**, the image processing circuit, wherein the pixel circuit is operable

to: generate a first random number, add the first random number to a first pixel value,

generate a second random number, and add the second random number to a second

pixel value.

       See rejection of claims 1 and 31;

Considering claim **35**, the image processing circuit of claim 34 wherein the pixel circuit

is operable to generate the first and second random numbers from respective first and

second seed numbers, is met by the Random number generator 24; (see also col. 5,

lines 55-65)

Considering claim **36**, the image processing circuit of claim 34 wherein the pixel circuit

is operable to: generate the first random number from a seed number; and generate the

second random number from the first random number.

See rejection of claim 34;

Considering claim **37**, the image processing circuit of claim 34 wherein:

the first pixel value corresponds to a pixel location in a first video frame; the second

pixel value corresponds to the pixel location in a second video frame; and the first

random number equals the second random number.

See rejection of claim 30;

Considering claim **38,** the image processing circuit of claim 34 wherein: the first pixel

value corresponds to a starting pixel location in a first video frame; the second pixel

value corresponds to the pixel location in a second video frame; and the first random

number does not equal the second random number, is inherent in a pixel image display

system. (see rejection of claim 30)

Claim **45**, is a method claim of claim 1 and thus, claim 45 is rejected for the same

reasons as claim 1;

Considering claim **46**, the method of claim 45, further comprising: generating a random

number; setting the compensation value equal to the random number.

See rejection of claim 7;

Considering claim **48**, the method of claim 45, further comprising: determining whether

the sum of the pixel and compensation values is within a predetermined range of pixel

values; and setting the pixel value equal to a value within the range if the sum is outside

of the range.

See rejection of claim 7;

Considering claim **49**, the method of claim 45 wherein the modifying comprises

modifying the pixel value if the pixel value is less than the threshold value.

See rejection of claim 8;

Considering claim **50**, the method of claim 45 wherein the modifying comprises adding a

compensation value to the pixel value, is met by Adder 22, fig.4;

Considering claim **51**, a method, comprising:

generating a random number, is met random number generator 24, fig.4;

combining the random number with a pixel value, is met by the adder 22, fig.4

Considering claim **52**, the method of claim 51, further comprising *truncating the random number before combining the random number with the pixel value, is inherent because the random number would have to be suitably sized before being combined with the pixel value for successful, desired output.*

Considering claim **53**, the method of claim 51, further comprising clipping the pixel value if the pixel value is outside of a predetermined range.

See rejection of claim 52;

Claim **54** is a method claim of claim **15** and thus, claim **54** is rejected for the same reasons as claim **15**;

Considering claim **56**, wherein the first and second compensation values equal the same randomly generated number, is met by random number generated by generator 24, fig.4;

Considering claim **58**, see rejection of claim 24;

Considering claim **59**, the method of claim 58 wherein:

the generating the first random number comprises truncating the first random

number; and the generating the second random number comprises truncating the second random number, *is inherent because the random number would have to suitably sized before being combined with the pixel value for successful, desired output.*

Considering claim **63**, a method, comprising:

a) generating a first random number using a first seed number;

b) comparing a first pixel value to a first threshold value, the first pixel value corresponding to a starting pixel location in a first video frame;

c) adding the first random number to the first pixel value if the first pixel value is less than the first threshold value;

d) generating a second random number using a second seed number;

e) comparing a second pixel value to a second threshold value, the second pixel value corresponding to a starting pixel location in a second video frame;

f) adding the second random number to the second pixel value if the second pixel value is less than the second threshold value.

See rejection of claim 15;

Considering claim **65,** see rejection of claim **33.**

Considering claim **66,** a method, comprising:

a) generating a first random number,

b) adding the first random number to a first pixel value;

c) generating a second random number;

d) adding the second random number to a second pixel value.

See rejection of claim 15;

Considering claim **67**, the method of claim 66 wherein the generating the first and

second random numbers comprises generating the first and second random numbers

from respective first and second seed numbers, **is inherent** because the random

number would have some predetermined or programmed way of generating the

random numbers.

Considering claim **68**, the method of claim 66 wherein: the generating the first random

number comprises generating the first random number from a seed number; and

the generating the second random number comprises generating the second

random number from the first random number.

See rejection of claim 67;

Considering claim **69**, the method of claim 66 wherein: the first pixel value corresponds

to a pixel location in a first video frame; the second pixel value corresponds to the pixel

location in a second video frame;   the generating the second random number

comprises generating the second random equal to the first random number.

See rejection of claim 37;

Considering claim **70**, the method of claim 66 wherein: the first pixel value corresponds to a starting pixel location in a first video frame; the second pixel value corresponds to the pixel location in a second video frame; and the generating the second random number comprises generating the second random number unequal to the first random number.

See rejection of claim 37;

Claim Rejections - 35 USC § 103

8.   The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

9.   Claims **4, 6, 7,18, 19, 21, 22, 26, 27, 32, 55, 60-61, and 64** are rejected under 35 U.S.C. 103(a) as being unpatentable over Shono.

Considering claim **4**, the image processing circuit of claim 1 wherein the threshold value is within a range of approximately 50 - 80.

Regarding claim 4, Shono does not specifically disclose threshold value to be within a range of approximately 50-80. However, it would have been an obvious matter of design choice to modify the Shono reference by having desired range of threshold

values, since applicant has not disclosed that having a particular range of 50-80 solves

any stated problem.

Considering claim **6**, the image processing circuit of claim 1 wherein the compensation

value comprises a randomly generated value within a range of -3 - 3.

Regarding claim 6, see rejection of claim 4;

Considering claim **7**, the image processing circuit of claim 1 wherein the pixel circuit is

further operable to: determine whether the sum of the pixel and compensation values is

within a predetermined range of pixel values; and set the pixel value equal to a value

within the range if the sum is outside of the range.

See rejection of claim 4;

Considering claim **18**. The image processing circuit of claim 15 wherein the first and

second threshold values are within a range of approximately 50 - 80.

See rejection of claim 4;

Considering claim **19,** the image processing circuit of claim 15 wherein the first

threshold value equals the second threshold value.

Regarding claim 19, Shono does not specifically disclose the first threshold value

equals the second threshold value. However, it would have been an obvious matter of

design choice to modify the Shono reference by having first threshold value equals the

second threshold value, since applicant has not disclosed that having such equal values

solves any stated problem.

Considering claim **21,** the image processing circuit of claim 15 wherein the first

compensation value equals the second compensation value.

See rejection of claim **4**;

Considering claim **22**. The image processing circuit of claim 15 wherein the first and

second compensation values comprise respective randomly generated numbers within

a range of -3 – 3;

See rejection of claim 4;

Considering claim **26**, the image processing circuit of claim 24 wherein the second seed

number equals the first random number.

Shono does not specifically disclose whether the second seed number equals

the first random number. However, it would have been an obvious matter of design

choice to modify the Shono reference by having the second seed number equals the

first random number, since applicant has not disclosed that particularly having the

second seed number equaling the first random number solves any stated problem.

Considering claim **27**, the image processing circuit of claim 24 wherein the second seed

number equals the first seed number.

See rejection of claim 26.

Considering claim **32**, the image processing circuit of claim 31 wherein the second seed number equals the first seed number.

See rejection of claim 26.

Considering claim **55**, the method of claim 54 wherein the first threshold value equals the second threshold value.

See rejection of claim 19.

Considering claim **60**, the method of claim 58 wherein the second seed number equals the first random number.

See rejection of claim 19.

Considering claim **61**, the method of claim 58 wherein the second seed number equals the first seed number.

See rejection of claim 19.

Considering claim **64**, comprising setting the second seed number equal to the first seed number.

See rejection of claim 19.

Allowable Subject Matter

10.   Claims **28, 29, and 62** are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

An image processing circuit, wherein the pixel circuit is operable to: *truncate* the first random number before adding the first random number to the first pixel value; *truncate* the second random number before adding the second random number to the second pixel value; set the second seed number equal to the *untruncated* first random number, as in claim **28**; wherein generating the first and second random numbers comprises generating the first and second random numbers according to the following equation: random number= (1664525 x seed number+ 1013904223)mod 232, as in claims **29** and **62**.

Conclusion

11.   The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Tanioka, U.S. Pat. No. 6,118,547 discloses an image processing method and apparatus.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Paulos M. Natnael whose telephone number is (703) 305-0019. The examiner can normally be reached on 9:00am - 5:30pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, John Miller can be reached on (703) 305-4795. The fax phone number for the organization where this application or proceeding is assigned is (703) 872-9314.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 305-4750.

MICHAEL H. LEE
PRIMARY EXAMINER

Paulos Natnael
November 11, 2003